Anti-counterfeiting and anti-piracy technology guide

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Active RFID Tags

Today the use of active RFID tags to remotely track and monitor the real-time location of objects and even people is relatively widespread. These types of tags can be used to do remote inventory and ensure that objects remain in their correct place, thereby providing anti-theft protection as well. They can also be used to control access to offices and large areas (for example conference halls or amusement parks) without the need for credentials.



Used for
- Authentication
- Tracking/Tracing

Suitable for
- Medium-sized products
- Large products

Goes on
- Product
- Packaging

Can be used for
- Physical products

Visibility
- Invisible

Reading device needed
- Yes

Connection to server
- Yes

Description

Active RFID tags have their own power battery and a transmitter and a receiver alongside their antenna and integrated circuit. The battery enables them to have large memories, which are often rewritable, and sensors. They typically use high frequencies (ultra-high frequency and super high frequency), which allow them to operate at much greater distances than passive and semi-passive tags (up to 200 metres from the reader, depending on their antenna and the energy available in their batteries) and are best for supporting the additional services they offer. Most active tags are covered with some sort of shell to protect their features from the environment.

All of these features make them larger in size than passive tags, and more expensive.

Uses

The size, cost and functions of active RFID tags make them suitable for use with high-value goods, especially in the industrial sector – for example in the mechanical industry. The additional functions that active RFID tags offer – such as radiolocation and the measurement of environmental parameters like temperature – also make them particularly attractive to logistics operators. They are often used for product tracking both within companies and between them, being widely affixed to freight containers.

Implementation

Any changes that may need to be made to the production process to implement this technology will depend on how you decide to attach the active RFID tag to the product. If you attach it to the exterior of the finished product, only minor changes will be needed (e.g. adding an attachment process to the end of the production chain). If, however, you decide to embed the active tag into the product – so as to make it less visible and easily accessible (and thus removable or replaceable) – you may need to make significant changes to the production process, although these will depend on your particular product and the mode/place of embedding.

Cost

Implementing an active RFID tag system will require initial investments in equipment management systems, readers and changes to the production process. The cost of the devices themselves is in the tens or hundreds of euros per tag. This is because active RFID tags can be reused and are designed for ‘high-value’ applications.

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